

AN INVESTIGATION OF THE CANNOT SAY  
SCALE OF THE GROUP MINNESOTA  
MULTIPHASIC PERSONALITY  
INVENTORY

By  
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## CHAPTER I

### INTRODUCTION

#### Statement of the Problem

Since its publication in 1942, the Minnesota Multi-phasic Personality Inventory (MMPI) has undergone extensive investigation and now stands as our most widely used personality test. Cronbach (1960) states that it has been studied more extensively and more adequately than any test of its kind which probably accounts in large measure for its present general acceptance and wide usage.

The MMPI is composed of ten "clinical scales" and four "validity" scales. The "clinical scales" (Hs, D, Hy, Pd, Mf, Pa, Pt, Sc, Ma, and Si) have been investigated to a considerable extent. Of the "validity" measures, however, only three--L, F, and K--have received much attention from research workers. The fourth "validity" measure, the Cannot Say scale, which consists simply of the counted number of items omitted on the test, has thus far received relatively little consideration in the literature.

A large number of Cannot Say responses is considered undesirable in an MMPI protocol and various means are employed to either (a) reduce the number of such responses



by giving special instructions to the test subject or (b) correct for depressed profiles resulting from excessive item omissions by certain methods of adjusting the scores (Brown, 1950; Hovey, 1958). Some investigators (Dahlstrom and Welsh, 1960) recommend eliminating altogether the Cannot Say alternative.

The effect of a high number of omissions in a MMPI protocol is commented upon by Dahlstrom and Welsh (1960):

"Any item placed in the Cannot Say category is automatically removed from the scoring of the MMPI scales. It is not considered as either deviant or conforming, True or False. The general effect of such omissions, then, is to reduce the length of the test, shrink the variance, and attenuate the profile."

Due to the omission of a large number of items the examiner is unable to make comparisons with the standardization populations. Though there may be a question whether or not a claim for lessened validity is in all cases true, it would seem safe to assume that the reliability of the test is reduced because of the consequent reduction in the length of the test. These authors recommend the wording of instructions so as to influence test subjects to respond to every item in the test.

However, since item omission itself is test behavior the possibility arises that when excessive omissions occur in a protocol, even after instructions are worded so as to minimize their occurrence, important data might be wasted by discarding the test. The Cannot Say score might provide

information concerning personality characteristics of the test subject.

### Purpose

The purpose of this study is (a) to investigate whether excessive item omission behavior on the MMPI may contribute "clinical" data by reflecting certain personality characteristics of the test subject and (b) to consider certain characteristics of the test itself as possibly influencing item omission behavior.

### Survey of the Literature

That valuable information may lie in the high Cannot Say score is suggested by Hathaway and McKinley (1951) who state:

"In its own right the Question score is an indicator of personality factors, but no specific clinical material on it has been analyzed."

Hanley (1957) also mentions this possibility:

"...reference to outside criteria may reveal, as has often been suggested, that the validating scales themselves tap personality dimensions rather than temporary response sets."

In his study of control in psychological adjustment, Caudra (1956) eliminated from consideration any protocol which contained more than 40 omitted items. He states:

"The fairly large number of records which were rejected...suggests that the height of the Cannot Say score may be a good diagnostic clue; this was not pursued further, however, being only tangential to the purpose of the present research."

Tamkin and Scherer (1957) recognized this possibility and attempted, although unsuccessfully, to relate certain personality characteristics to high Cannot Say scorers.

In line with the probability that such test-taking behavior may reflect personality variables, the question arises: "How stable is item omission behavior?" There is evidence available which indicates that normal subjects tend to be fairly consistent in the number of items omitted when retested with the MMPI up to intervals of 1,060 days between tests (Holzberg and Alessi, 1949; Kaufmann, 1956; Schofield, 1950, 1953). This suggests that item omission behavior may be a fairly stable characteristic and, as Hanley (1957) contends, not merely a temporary response set. Guilford (1954), using the Guilford personality inventories STDCR, GAMIN, and Personnel Inventory found considerable stability in the tendency of certain factory foremen to respond with "?" from test to test. To date, however, there has been no attempt reported in the literature to relate the consistency of item omission behavior on the MMPI to similar behavior on other tests. This study investigates the consistency between item omission behavior on the MMPI and certain similar test behavior on the Strong Vocational Interest Inventory. If a consistency is found to exist, support will be given to the hypothesis that the tendency of individuals to omit items on the MMPI is not "test-specific" but is a more general personality

trait or behavior characteristic.

That the tendency of some individuals to respond to test items in certain ways regardless of item content is a relatively stable personality trait was suggested by Cronbach (1946) some years ago. He was one of the first to concern himself with the problem of "response sets" as variables which affect psychological test performance. He contended that "response sets" such as acquiescence, tendency to gamble, tendency to disagree, and tendency to use the neutral response in "...tests of attitudes, personality and psychophysical judgments," are characteristic of certain individuals. He suggested that the unstructured or ambiguous nature of some test items is probably the most important factor influencing the appearance of such "response sets". Berg and Rapaport (1954) found evidence to support the belief that "response sets" occur when test subjects are tested in an ambiguous situation. Hamilton (1957) cites data obtained from testing neurotic and control subjects in a variety of ambiguous situations and states:

"The data show marked individual differences and considerable evidence for intra-individual consistency in avoidance/non-avoidance of ambiguous situations."

He suggests that the neurotic person may avoid ambiguity in order to reduce the anxiety which occurs as a result of the uncertainty and conflict aroused by such situations. That is, individuals were found to have

different degrees of intolerance of ambiguity, a construct which has been dealt with thoroughly by Frenkel-Brunswik (1948, 1949).

A concept which appears to be closely related to intolerance of ambiguity is Brim's concept of desire for certainty (1955). Interested in attitude research data which pointed to the fact that some individuals respond more intensely to attitude items than other individuals, he attempts an explanation of this behavior as an expression of the individual's desire or need for certainty. He states:

"Our explanation of individual differences in generalized intensity in response to attitude items is that people high in intensity have a greater need for security, and so respond with greater conviction...an individual high on intensity must also make more frequent responses at the extreme of the...content dimension, because only in this way can he actually remove the ambiguity."<sup>1</sup>

These two constructs, intolerance of ambiguity and desire for certainty, offer the possibility of contributing to a better understanding of the test item omission behavior observed in some individuals who take the MMPI. The items which compose the MMPI vary in the specificity of the behavior to which they refer. That is,

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<sup>1</sup>Brim and Hoff (1957) state that further studies dealing with the need for security indicate that a more accurate description of what Brim's test measures is a desire for certainty. They therefore use the term "certainty" rather than security in speaking of this test.

some items may be considered to be more ambiguous than other items. Also, the MMPI, because of the rather intimate personal content of many of the items, may be reacted to as a somewhat threatening situation by some individuals. The relative ambiguity of the individual items on the MMPI, along with the possible threat<sup>2</sup> of the test itself, may be factors which influence test performance of some individuals.

One way of expressing intolerance of ambiguity in response to an ambiguous test item is for the individual to "leave the field", that is, to not commit himself by omitting the item. The lack of structure of the item, the lack of certainty the individual feels with regard to the item, may be resolved by not marking the item either True or False. This study seeks to determine whether the need for structure, for certainty (which seem to be closely related constructs), influences some individuals to omit items on the MMPI.

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<sup>2</sup>That items on the MMPI may pose something of a threat to some test subjects is also suggested by a personal communication from Hovey (1960). Responding to this investigator's request for further information regarding his method of correcting for excessive item omissions (1958), he commented briefly concerning his interest in an investigation along the lines of the present study:

"I did not continue a comparable study here because of difficulty in obtaining additional cases for cross-validation. It seems that word passed around among patients here that it is not at all dangerous to answer all the items. At any rate, an answer sheet seldom shows up with as many as 25 items left unanswered."

While the major interest of this study is to investigate personality characteristics of individuals who omit a large number of items on the MMPI, data which are readily available make it possible to investigate one characteristic of the test itself which may influence item omission. Edwards (1959), using Cronbach's (1949) observations of response sets as a starting point, gives evidence to support the hypothesis that, "The social desirability of items on a personality test markedly influences the probability of their being endorsed."

More specifically stated his hypothesis is:

"...just as individual differences have been found in the tendencies of subjects to respond True, Undecided, or False, regardless of item content, so also there are individual differences in the tendencies of subjects to give socially desirable responses to items in personality inventories, regardless of whether the socially desirable response is True or False."

Heineman (1960) asked 108 students in Introductory Psychology to rate each item of the MMPI on a five-point rating scale of favorability. He reports favorability ratings for each of the 566 items. These data make it possible to test the hypothesis regarding the effect of social desirability of the items on item omission behavior. As has been suggested by Hanley (1957) and Heineman (1953), the social desirability content of MMPI items may influence some test subjects to respond in terms of putting themselves in a good light rather than in terms of giving an honest opinion of themselves. In fact,

many writers feel that the degree of social desirability of item content acts as a major factor affecting responses to personality measures. This study will test the hypothesis that some test subjects may be influenced in their responses to the MMPI items by the social desirability of the items and omit largely those items which may be said to reflect socially undesirable characteristics.

#### Statement of Hypotheses

The following hypotheses are investigated in this study:

1. Subjects who omit a high number of items on the MMPI will exhibit similar test-taking behavior on the Strong Vocational Interest Inventory.
2. Subjects who omit a high number of items on the MMPI will show less tolerance of ambiguity than subjects whose number of omissions falls at the mode or around the mean for the entire population under consideration.
3. Subjects who omit a high number of items on the MMPI will be found to have a greater desire for certainty than subjects whose number of omissions falls at the mode or around the mean for the entire population under consideration.
4. Subjects who omit a high number of items on the MMPI will omit a significantly larger number of items which may be considered to reflect socially undesirable characteristics, as opposed to items on the MMPI which may be considered to reflect socially desirable characteristics.



## CHAPTER II

### EXPERIMENTAL DESIGN

#### Sample

The subjects for this experiment consisted of second year male and female undergraduate students at the University of Florida who completed the MMPI and the Strong Vocational Interest Inventory as part of the required testing program of the University prior to their Freshman year in college. Three different groups were selected.

High Cannot Say Group (HCS). Subjects composing the HCS group were individuals whose Cannot Say score was equal to or greater than approximately two standard deviations from the mean number of omissions for the entire population of 3,198 students tested in September of 1959. The omission score of 24 was thus selected as the cut-off point for the HCS group.

Mid-Range Cannot Say Group (MCS). A second group consisted of subjects whose number of omissions on the MMPI fell in the neighborhood of the mean number of omissions for the entire population. This group included students

whose number of item omissions was from four to six.

Low Cannot Say Group (LCS). This group was composed of subjects whose Cannot Say score fell at the mode of the distribution. The mode of the Cannot Say distribution was found to be zero.

### Test Instruments

McReynolds' Concept Evaluation Technique (CET) (1951, 1954).

The CET, as modified by Eriksen (1953), was used as the measure of intolerance of ambiguity in this study. It consists of 50 Rorschach concepts, half of which are scored plus and half minus by Beck's frequency tables. This subject is asked to accept or reject (Yes or No) each of the 50 Rorschach concepts indicated by the examiner.

McReynolds' criteria for the selection of the concepts is specified as follows:

"The selection of concepts from Beck's list was made in such a manner that for each Rorschach card there was the same or nearly the same number of plus concepts and minus concepts, i.e., for each plus concept with given typical determinants (movement, form, color, and the like) there was a corresponding minus concept; and for each plus concept represented by a given size of blot area (W,D,Dd,S) there was a corresponding minus concept. Of the 50 concepts, 54 per cent were from the achromatic cards and 34 per cent were from the last three cards" (1951).

McReynolds found the reliability of the number of Yes'es (i.e., acceptance of suggested concepts) to be .82 for a total of 214 cases of mixed psychiatric diagnosis,

as estimated by the odd-even method and corrected by the Spearman-Brown formula. More pertinent to the present study, he obtained a reliability coefficient of .93 for a group of 69 normal subjects. The percentages of Yes responses to each item were also computed for normal men and women to see whether separate norms would be needed, but no significant differences between the two groups were found (1954).

While McReynolds did not make use of the number of rejections as a measure of intolerance of ambiguity in his studies he did comment on possible interpretations of the J-score (his term for the number of Yes'es recorded for a test subject). He states:

"More specifically, the hypothesis for a low J-score would be that this individual tends to maintain, in his thinking, strict standards of evaluation, to have highly channelized thought patterns which would tend to revolve endlessly about a few subjects" (1954).

The number of rejections has been used by several other investigators as a measure of intolerance of ambiguity. Eriksen (1953), studying personality rigidity and the Rorschach, found that:

"Subjects who reject a large number of indicated Rorschach concepts or interpretations also tend to show a greater reluctance to offer hypotheses to an ambiguous stimulus and less ability to free their behavior from perceptual-cognitive sets."

He found that the number of rejections on the CET correlated -.47 with "hypothesis availability" when subjects were confronted with visual stimuli tachistoscopically

presented at sub-rocognition threshold speeds. This negative correlation was significant at the .01 level.

A negative correlation of  $-.42$ , significant also at the .01 level, was found between the number of rejections and the number of direct solutions on problems 6 through 11 of the water-jar problems described by Luchins.

A correlation of  $.40$  was found to exist between the number of rejections on the CET and the effect of an erroneous expectancy upon speed of perceptual recognition.

Davids (1955) also used the CET as a measure of intolerance of ambiguity but failed to show any significant relationships between performance on the CET and measures of authoritarianism.

The findings of Kenny and Ginsberg (1958), however, show a lack of correlation among a battery of tests which purport to measure intolerance of ambiguity.

"Only 7 of the 66 correlations among measures of intolerance of ambiguity were significant at the .05 level, two of these having a relationship opposite to that predicted."

This lack of correlation suggests that caution must be used in employing any test purporting to measure this construct. They further state:

"In so far as the present measures may be regarded as relevant indicators of the intolerance of ambiguity construct, the results offer little support for a general construct of intolerance of ambiguity....These conclusions do not mean, however, that the construct should necessarily be discarded. It may, rather, be less general or broad in scope than had been initially assumed. Future research may discover a number of distinct or relatively independent dimensions of intolerance of ambiguity rather than just one unique generalized factor."

The specificity of intolerance of ambiguity measures, as suggested by Kenny and Ginsberg, indicates the need for critical evaluation of the test behavior of subjects before attaching any meaning to their test performances.

One obvious meaning of such test behavior is that some people are simply more suggestible than others. McReynolds entertained this possibility but pointed to a study done by Eysenck and Furneaux (1945) which, he felt, indicated that, "...suggestibility as indicated, e.g., by hypnotizability, is not significantly correlated with the willingness of S's to accept suggested concepts on ink-blots" (McReynolds, 1951). Since other possible interpretations could also be offered to explain test behavior on the CET, the rationale for using the number of rejections of the suggested Rorschach concepts as a measure of intolerance of ambiguity deserves consideration.

The reasoning has been of this nature: The person who is intolerant of ambiguity will require more structure than the person who is tolerant of ambiguity before accepting suggested concepts of the ambiguous visual stimuli. Half of the concepts are "good form" responses and half are not. Thus, the person who is intolerant of ambiguity is expected to reject a larger number of concepts than the person who is more tolerant of ambiguity since half the concepts lack "good form" quality.

However, an argument may logically be made for a contrasting point of view. The person who is intolerant

of ambiguity supposedly will try to impose structure on ambiguous situations in order to remove the uncertainty implied in this sort of situation. On the CET, the examiner goes so far as to suggest possible interpretations of indicated Rorschach concepts, thus giving structure to the different parts of the blots. The person who is intolerant of ambiguity, because of his need for structure, might be expected to accept more concepts than the person who is tolerant of ambiguity.

Thus, there exists the possibility of interpreting responses to the CET from either of two points of view. It appears reasonable, however, to assume that subjects who are intolerant of ambiguity, even though possible interpretations of the ink blot areas are offered by the examiner, would still maintain "stricter standards of evaluation" than subjects who are tolerant of ambiguity. No doubt numerous interpretations could be made to each of the concepts but the test subject must respond to the one concept suggested. McReynolds (1954) likens this procedure to a paired comparison technique in that:

"In taking the CET the S is required to compare a blot area with a suggested concept. For each evaluation then, the S is presented with two concepts--that implied by the question to him (e.g., bat, man) and that of the blot area. His task is to compare the two concepts and determine whether they are alike (Yes answer) or different (No answer). The procedure may therefore be considered a paired comparison technique. If the S's standards of comparison are strict he will tend to answer No; whereas if he answers Yes more frequently it is indicated that his standards are less strict."

This study, like that of Eriksen (1953) and Davids (1955) makes use of the total number of rejections of Rorschach concepts on the CET as a measure of the strictness of the subject's standards of evaluation, or rather his intolerance of ambiguity.

Desire for Certainty Test (DC). This test, termed a projective measure by its author, purports to measure, "...individual differences in the strength of the desire for certainty" (Brim and Hoff, 1957). The test consists of 32 statements about everyday events in the following form: "The chances that an American citizen will believe in God are about \_\_\_\_ in 100." Subjects respond by filling in a probability estimate for each statement and then indicating how certain they feel about their estimate by rating it on a five-point scale ranging from 1 (Very Sure) to 4 (Not Sure at All). The author states:

"The statements...(include)...four from each of eight different areas, e.g., economics, recreation. Half of the statements (are) in conformity to generally accepted American values, while half (are) not. In addition each statement had a different estimated probability value drawn from a set of 32 values ranging from 1 to 46 and from 54 to 99. Combinations of these three criteria were made randomly as specifications for the construction of each test statement" (Brim and Hoff, 1957).

Brim attempted to control for the amount of knowledge subjects had about an item by "...drawing the items from a variety of areas." The use of a homogeneous group, such as college Freshmen and Sophomores, minimized differences in the amount of general information possessed

by the subjects. In the construction of the test the author selected test items from different content and value areas in order to randomize the effects of item desirability upon test performance. No relationship was found to exist between subjects' performance on the DC test and standard socioeconomic variables or with intelligence.

Regarding the rationale underlying the DC test, Brim states:

"The relationship between probability estimates of occurrence of events and the certainty of these estimates shows the typical U-shaped curve found in the content-intensity relationship of attitude data. An explanation in terms of an equiprobability through ignorance principle is given (here) for both the attitude and probability expectation data. Individual differences in both intensity and extremity of responses to attitude and expectancy questions are considered to be the result of individual differences in need for security. A stronger need results in proportionately more items being responded to with greater intensity and extremity as the individual seeks to avoid the middle range of response in which he admits his ignorance" (Brim, 1955).

Brim feels that the construct of desire for certainty is closely akin to the construct of intolerance of ambiguity.

Using an odd-even split, corrected by the Spearman-Brown formula, the reliability of this test was found to be .81 on an N of 50 subjects (Brim and Hoff, 1957).

Correlations with the personality ratings of roommates reported by Brim and Hoff were found to be .18 and .24 respectively when separate scoring methods for (a) extremity of probability estimate and (b) indicated certainty of response were used. However, when a joint



scoring method was used (i.e., difference of probability estimate from 0 or 100, multiplied by the indicated certainty or probability estimate) a correlation of .39 was obtained which was significant at the .01 level. Brim (1955) provides evidence to support the belief that a joint scoring method is a more reasonable way of obtaining an estimate of the subjects' desire for certainty.

Thirty-eight subjects filled out six attitude statements from different areas and indicated their agreement or disagreement on a 13-point continuum. An average extremity score was computed for each subject. Extremity scores on the attitude were correlated with scores on the desire for certainty test. An  $r$  of .57 was obtained which was found to be significant at the .01 level (Brim and Hoff, 1957).

Brim and Hoff tested the hypothesis that, "...high and low scorers on the F scale would be similar in showing a high desire for certainty." Using eta as a test for curvilinear relation a value of .28 was obtained, which has a probability of between .05 and .10 (two-tailed) both for significance and for nonlinearity.

The average extremity scores obtained from 83 subjects' responses to three Thurstone scales on censorship, patriotism, and the Bible were also correlated with scores on the desire for certainty test. By computing a Pearson product-moment coefficient of correlation an  $r$  of .28,

significant at the .02 level, was obtained by Brim and  
off.

They conclude from this data that:

" significant correlations were obtained between  
response extremity and test scores, suggesting  
that individual differences in desire for  
certainty are consistent from one measure to  
another."

In another study reported in the same article, they  
report that they were able to experimentally increase or  
decrease the degree of desire for certainty exhibited by  
subjects on the DC test.

The present study used the joint scoring method  
recommended by Brim. Responses were scored for the tend-  
ency to make estimates approaching 0 or 100, and the  
degree of certainty for the estimates indicated. Thus,  
if a subject responded to a particular item with a  
probability estimate of 10 out of 100 and indicated that  
he was Very sure (i.e., circled "1") of his estimate,  
his joint score for the item was 10. The joint scores  
for all 32 items for each subject were summed and an  
average score obtained. Hence, the lower the mean score  
on this test, the higher the desire for certainty of the  
subject.

Strong Vocational Interest Inventory. This well-known  
interest inventory was used to assess the degree of  
generality which can be claimed for test item and situ-  
ation behavior of subjects who take the S-VII. If this test-  
taking behavior is not merely a temporary "response set"

it should occur to some degree on other tests.

Certain responses on the Strong are similar to test item omission behavior on the MMPI. Items 1-280 of the Strong for men, items 1-255 and items 362-400 for women, may be responded to by the marking of one of three possible alternatives: Like, Indifferent, and Dislike. The "Indifferent" response is believed to be similar in nature to item omission in the MMPI in that the subject does not have to reveal his feelings. It is a Non-Committal response.

Another Non-Committal alternative appears in the Strong with the "Equally Well" response, items 321-360 for men and items 296-333 for women. Here the subject indicates his choice of pairs of activities by responding with Like, Dislike, or Like Both Equally Well. The "Equally Well" response is considered to be similar to item omission on the MMPI.

One other response category on the Strong which is similar to item omission on the MMPI is the "?" response, items 366-388 for men and items 362-400 for women.

Thus, by counting the number of "Indifferent", "Equally Well", and "?" responses on the Strong, a Total Non-Committal score was obtained for each test subject.

#### Procedure

Thirty subjects, 15 males and 15 females, from each of three groups, formed on the basis of MMPI item omission

behavior: (a) a high Cannot Say group (HCS); (b) a mid-range Cannot Say group (MCS); (c) a low Cannot Say group (LCS) were tested with the CET and the DC test. Preceding the administration of the CET the subject was given a brief description of the Rorschach cards and asked to look at each card quickly and tell some of the things he saw or that might have been represented on the cards. Following McReynolds' recommendations for the administration of the CET, the procedure below was utilized:

- E. "Have you ever taken or do you know anything about the Rorschach, the ink blot test?"
- S. (Responds to question.)
- E. "Well, this is a test which consists of ten cards which have on them designs made up out of ink blots. Just to familiarize you with them, look at each of them quickly and tell me some of the things you see or some of the things which might be represented." (E hands the cards, one at a time, to the S and waits for S to respond. After one or two responses, E takes the card and hands S the next one.)
- E. (After the last card has been seen by S) "So far we have gone through the cards and you have told me the things that you have seen (and you have done very well). Now we are going through them quickly again, and this time I am going to suggest certain things to you. I want you to tell me if you can see them. That's all there is to it this time. I will say, 'Could this be a--something or other--' and you look at it, decide and say, 'Yes, it could' or 'No, it couldn't.' Now, some of the things I will suggest to you look like what I say, and some don't--so don't say anything could be what I say unless you really see it; on the other hand, be sure to tell me if you do see it. Don't take too long to study each thing I suggest, but decide as quickly as you can whether it could be what I suggest. Do you understand?"

All right, here's the first one" (McReynolds, 1951).

After the subject responded to each of the 50 concepts with either a Yes or No response, he was immediately presented with the DC test. The following instructions were given for this test:

"Indicate on the answer sheet provided you the probability (some number from 0 to 100) you feel is appropriate to the following statements. Indicate also, by circling one of the numbers (1, 2, 3, 4, or 5) the degree of certainty you feel with regard to your probability estimate. Do not spend too much time on any one statement and finish as quickly as you can. Remember, each probability estimate refers to so many chances out of 100."

After reading the instructions the examiner asked the subject if there were any questions and explained again the instructions if needed.

For 64 males and 34 females in the HCS group, 69 males and 40 females in the MCS group, and 56 males and 38 females in the LCS group, Strong answer sheets were obtained. The number of "Indifferent", "Equally Well", and "?" responses on the Strong were counted for subjects in each of the three groups and Total Non-Committal scores obtained. The "?" scores were also listed separately.

For the HCS group alone (Male N = 66; Female N = 36) the total number of item omissions for each of the 566 MMPI items was tallied.

## CHAPTER III

### RESULTS

To test this study's first hypothesis that subjects who omit a high number of items on the MMPI will exhibit similar test-taking behavior on the Strong Vocational Interest Inventory, the Total Non-Committal scores described earlier were computed for males and females in each of the three groups under consideration. Since the items making up the Strong differ in content for males and females, and since the number of items included in each of the three sub-divisions of the Total Non-Committal score varied ("Indifferent", "Equally Well", and "?"), the interest inventory for males and females could not be considered identical, and the data obtained for males and females were treated separately (Table 1).

A simple analysis of variance for groups of unequal sizes was run using the computational formulas outlined by McNemar (1955). For the three male groups an F of 4.92, significant at the .05 level, was obtained indicating that the degree of MMPI test item omission behavior is a real source of variation. That is, when the Total Non-Committal Strong scores for the three male

groups were considered simultaneously, the three group means were found to differ significantly among themselves (Table 2). The degree of item omission on the MMPI was found to be related to similar test behavior on the Strong.

Using the t test for independent samples the differences between the means of all combinations of the three groups were tested for significance. A t of 2.31, significant at the .05 level, was obtained when the mean Total Non-Committal score of the HCS group was compared with the mean Total Non-Committal score of the LCS group. When the mean of the HCS group was compared with the mean of the MCS group, a t of 2.61, significant at the .01 level, was obtained. Comparison of the mean of the LCS group with the mean of the MCS group, however, produced a difference which was not significant, giving a t of .22 (Table 4). Thus, for the male group the first hypothesis is supported.

Utilizing the Total Non-Committal scores obtained on the Strong by the three female groups a non-significant F ( $F = .79$ ) was obtained (Table 3).

Since the "?" items of the Strong could be considered the most similar in nature to the MMPI Cannot Say alternative, these data were considered also and, as before, separately for males and females. A simple analysis of variance for groups of unequal sizes resulted in an F of 4.32, significant at the .05 level when the three male

groups were considered (Table 6). The mean Strong "?" score for the HCS group was found to be significantly greater than the mean score of the LCS group at the .05 level; similarly the HCS Strong "?" group mean was greater than the Strong "?" mean of the MCS group at the .02 level. No significant difference was obtained when the difference between the mean Strong "?" scores for the LCS and the MCS group were compared (Table 7).

Looking at the data obtained from the three female groups, however, some interesting differences are noted. A simple analysis of variance for groups of unequal sizes yielded an F of 7.38, significant at beyond the .01 level (Table 8). Comparing the mean Strong "?" score of the HCS group with the mean Strong "?" score of the LCS group, the mean of the HCS group was found to be significantly greater at the .001 level. In contrast to the results obtained with the male subjects, however, there was no significant difference found between the means of the HCS group and the MCS group ( $t = .38$ ); also, in contrast with the results obtained for the male subjects, the female MCS group obtained a mean Strong "?" score which was significantly greater, at the .01 level, than the mean score obtained by the LCS group (Table 9). Thus, for the females, the HCS group and the MCS group were quite similar in their responses to the Strong "?" items and both significantly different from the performance of the LCS group.



The study's second hypothesis stated that subjects who omit a high number of items on the MMPI will show greater intolerance of ambiguity than subjects whose number of omissions falls at the mode (zero omissions) or around the mean (four to six omissions). Using an odd-even split corrected by the Spearman-Brown formula the reliability of the CET was found to be .83 for the total N of 91 subjects tested in this study. This is slightly lower than the reliability estimate of .93 reported by McReynolds (1954).

Scores on the CET for subjects in the three groups were determined and a 2-way classification analysis of variance was run. Row, column, and interaction effects were not found to be significant. Neither sex, degree of MMPI item omission behavior, nor an interaction of these were significantly related to the subjects' rejection of Rorschach concepts on the CET (Table 10).

The third hypothesis concerned the relative degree of desire for certainty among the three groups of subjects. Using an odd-even split corrected by the Spearman-Brown formula, the reliability of the DC test was found to be .90 for the total N of 92 subjects tested. This is somewhat higher than the reliability estimate of .81 reported by Brim and Hoff (1957).

Again a 2-way classification analysis of variance was used, sex and group membership being considered. Row, column, and interaction effects were not significant,

though the effect of the row variance (i.e., sex) did approach significance (Table 11).

It is seen then that subjects who responded with a high number of omissions on the MMPI were not found to exhibit a greater intolerance of ambiguity, as measured by the CET, and did not show a greater desire for certainty, as measured by the DC test, than the subjects who omitted fewer MMPI items (zero or four to six omissions).

The last hypothesis concerned the influence of social desirability of the items composing the MMPI upon the likelihood of subjects omitting certain items. It was hypothesized that subjects who omit a high number of items on the MMPI tend to omit items which may be considered to refer to socially undesirable characteristics. The frequency of omissions for each item on the MMPI of subjects in the HCS group was tabulated. Each item was divided into one of two classifications: (a) Favorable and (b) Unfavorable. Since Heineman's five-point rating scale on favorability was used all items included in the range of .00 to 3.00 were classified as Favorable and all items included in the range of 3.01 to 5.0 were classified as Unfavorable. On this basis, 221 of the items were classed as Favorable and 345 as Unfavorable. Means and standard deviations were computed and a t test computed to determine the significance of the difference between the

two group means. The difference between the two means reached significance at the .05 level but in the direction opposite that predicted (Table 12). Subjects were found to have a tendency to omit items which were supposed to reflect desirable characteristics.

## CHAPTER IV

### DISCUSSION

The results obtained from the Strong may be interpreted as providing some support for the hypothesis that item omission type behavior is relatively stable from one test to another, although sex and the specific measures used to compare test behaviors are important variables. When the Total Non-Committal response was used as the measure of behavior similar to the MMPI Cannot Say response, item omission type behavior was found to be relatively stable for males but not for females.

However, when the Strong "?" score alone was used as the measure, the number of omissions on the MMPI was found to be a significant factor for both males and females, though still with some differences as noted earlier. That is, whereas for the males the HCS group obtained significantly higher Strong "?" scores than either the MCS or the LCS groups, for females the HCS group and the MCS group did not differ significantly from each other but did differ significantly from the LCS group.

It appears then that some support is present for

considering MMPI test item omission behavior as a general test taking behavior characteristic, and not merely test specific, though sex differences clearly emerge and complicate the picture. If the Strong "?" response may be considered to be more closely akin to the Cannot Say response of the MMPI than is the Total Non-Committal score, the sex difference becomes less of a consideration though still in evidence.

If the reasons for an individual omitting items on a questionnaire are considered numerous possibilities are immediately apparent. Dahlstrom and Welsh (1960) gives the most thorough review of possible reasons behind excessive use of the Cannot Say category of the MMPI. Confusion, highly charged emotional reactions to the test items, indecisiveness, dysphoric mood of the depressed patient, guardedness and/or suspiciousness, rationalizing the non-applicability of certain items (i.e., "motivated errors"), and lack of cooperation are some of the possibilities mentioned. Brown (1950) distinguishes between justifiable and unjustifiable omissions. Justifiable omissions include items which actually do not apply to the individual or items about which the individual really does not know enough to answer either "True" or "False". Unjustifiable omissions include deliberate attempts to falsify a response (i.e., respond Cannot Say) when in reality the individual could answer "True" or "False", and omissions due to indecisiveness.

He states that the Cannot Say alternative, "...provides a protective cage where the examinee can retire at will when he feels threatened." Hathaway and McKinley (1951) mention that some MMPI users have observed high item omissions by patients with psychasthenia and retarded depression.

Tamkin and Scherer (1957) investigated the hypotheses, drawn from statements of both Brown (1950) and Hathaway and McKinley (1951), that: (a) the Cannot Say scale, "...reflects a defensive or evasive attitude on the part of the examinee...", and (b) it is, "...related to the symptoms of psychasthenia and depression in psychiatric patients." Using MMPI profiles obtained from 12 male psychiatric patients whose Cannot Say scores ranged from 26 to 145 they were unable to substantiate either of these two hypotheses. They felt that, in general, "High Cannot Say scores...do not seem to represent a defensive attitude on the part of the psychiatric patient," though they added that certain individuals might use the Cannot Say alternative in this manner. They recognized that their investigation, however, was limited to MMPI variables alone and state that their findings do, "...not preclude the possibility that other meaningful relationships may exist, which were outside the scope of this study."

The present study, like that done by Tamkin and Scherer, selected only several of many possibilities to test. Using subjects selected exclusively from a college population, and using variables other than MMPI performance,

this study found no significant difference in measures of intolerance of ambiguity or desire for certainty in subjects who were high omitters on the MMPI as compared with subjects who were low omitters. These results should be examined from several aspects.

The most obvious question concerns the tests selected to measure intolerance of ambiguity and desire for certainty. As mentioned earlier, Kenny and Ginsberg (1958), using a variety of tests which purport to measure intolerance of ambiguity, found a lack of support for a general construct of intolerance of ambiguity. Though the CET was not one of the measures used and thus did not enter directly into the results they obtained, their findings suggest caution in terming any one test a measure of intolerance of ambiguity. Studies utilizing the CET as a measure of this construct have been few and its validity may be questioned on the grounds of inadequate research. This objection could certainly be raised, however, concerning any of the measures which have been used in the past to assess this construct. It is this investigator's belief that the validating work which has been done with the CET (Eriksen, 1953) furnishes a reasonable degree of evidence regarding its validity. Assuming that the DC test is similar to the CET in the behavioral characteristics it measures, the same may be said to justify its inclusion in this study.

Assuming then a reasonable degree of validity for the

CET and the DC test, it must be concluded that neither intolerance of ambiguity or desire for certainty, two related constructs, were factors which significantly influenced subjects' use of the Cannot Say alternative.

Brim and Höff believe that the degree of an individual's desire for certainty partly reflects that individual's lack of a feeling of security. To go a bit beyond this, one might say that the individual who manifests a desire for a high degree of certainty is reflecting a lack of self-sufficiency, a lack of a feeling of confidence in his ability to meet and deal adequately with his environment. Rubin-Rabson (1954) tested 43 adults, 18 to 58 years of age, with several tests including the Hunter Test of Social Attitudes and the Bernreuter Personality Inventory and found a negative correlation of  $-.43$ , significant at the .01 level, between the Bernreuter measure of self-sufficiency and the number of "non-committal" responses on the Hunter Test. She states, "A feeling of self-insufficiency is a basic dynamism in the avoidance pattern, whether of persons, activities, or ideas." Assuming that the DC test measures to some degree an individual's degree of self-sufficiency, the negative results obtained in the present study appear to contrast with the finding of Rubin-Rabson. If the DC test does measure a behavior characteristic similar to self-insufficiency, the HCS group would be expected to obtain significantly lower scores (indicating a greater



desire for certainty and, therefore, less self-sufficiency) than the MCS or the LCS groups. This, however, was not the case as the number of omissions on the MMPI did not prove to be a significant factor in the DC scores obtained by the three groups.

The results obtained by Rubin-Rabson and those obtained by the present investigator are not directly comparable since different tests were used and since the populations under consideration were dissimilar in several respects. Though the above comments are speculative, it would be interesting to obtain measures of self-sufficiency for subjects in groups similar to the groups which were used in this study and determine whether or not they differ significantly in the degree of self-sufficiency evidenced. Wolff (1955) has developed from an internal consistency analysis a self-sufficiency scale (Sf) utilizing 34 MMPI items. If future research is found to give added support to the use of the Sf scale as an index of general subjective certainty it will be possible to make use of Sf scores to investigate the hypothesis that subjects who are high omitters on the MMPI evidence less self-sufficiency than subjects who omit fewer MMPI items. Such a study could also provide information concerning the appropriateness of considering the DC test as a related measure of self-sufficiency.

It is difficult to account for the results obtained regarding the social desirability hypothesis. The HCS

group tended to omit items which may be considered to reflect socially desirable personality characteristics. This may perhaps suggest a general tendency in these subjects to maintain a more critical self-concept or one which reflects a lack of self-acceptance. There are, of course, other possibilities also.

The data utilized in testing the social desirability hypothesis of necessity were restricted to the HCS group since the low number of omissions in the other two groups did not permit their inclusion. Thus, there was no way to tell whether or not subjects who omit fewer items on the MMPI also tend to omit items which reflect socially desirable characteristics. The results speak only for the HCS group.

Future research will perhaps shed more light on the "clinical" significance of the Cannot Say scale. The present study, together with the study of Tamkin and Scherer, has failed to confirm the validity of several hypothesized personality correlates which were thought to be involved in excessive item omission behavior. It remains the writer's belief, however, that the Cannot Say scale does tap certain personality characteristics which may provide valuable data to the clinician. Further research on this scale would appear to be warranted and needed.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

Using University of Florida Sophomores, 30 subjects, 15 males and 15 females, from each of three groups formed on the basis of MMPI item omission behavior were tested with McReynolds' Concept Evaluation Technique (CET) and Brim's Desire for Certainty test (DC). The CET was included as a measure of intolerance of ambiguity and the DC test was used to measure a similar construct, need for certainty. The three groups tested were: (a) a High Cannot Say group (HCS) including subjects whose Cannot Say score was equal to or greater than 24; (b) a Mid-Range Cannot Say group (MCS) including subjects whose Cannot Say score was from four to six; and (c) a Low Cannot Say group (LCS) including subjects whose Cannot Say score was zero.

Total Non-Committal scores were obtained for three similar groups of larger size by summing the "Indifferent", "Equally Well", and "?" responses on the Strong Vocational Interest Inventory.

For the HCS group alone the number of item omissions for each of the MMPI items were counted and each item

placed in one of two classifications: (a) Socially Desirable or (b) Socially Undesirable.

It was found that the number of item omissions on the MMPI was not significantly related to the scores obtained by subjects on either the CET or the DC test.

The stability of item omission behavior when MMPI scores were compared with similar behavior on the Strong was found to vary with the sex of the subjects and the specific Strong measure used. Using a Total Non-Committal score as the Strong measure, males who were high omitters on the MMPI were found to have significantly greater scores on the Strong. No significant difference was obtained when the female groups were considered. When the Strong "?" score alone was considered, however, the influence of the number of item omissions on the MMPI was found to be significant for both males and females, although the female MCS group was not found to differ significantly from the female HCS group.

The HCS group tended to omit items which may be considered to reflect favorable personality characteristics to a significantly greater extent than items which may be considered to reflect unfavorable personality characteristics.

From the findings presented in this study it seems reasonable to conclude the following:

1. Intolerance of ambiguity and desire for certainty, as measured by the CET and the DC test respectively, are

not significant factors in influencing item omission behavior on the MMPI.

2. Stability of item omission behavior on the MMPI, as determined by relating the consistency of this behavior on the MMPI to similar behavior on the Strong, depends in part on the sex of the individuals concerned and in part upon the specific measure used to compare test behaviors. Some degree of stability can be inferred but the generality of item omission behavior still required further investigation.

3. Subjects who omit an excessive number of items on the MMPI omit a significantly greater number of items which may be said to reflect socially undesirable personality characteristics. This general trend may be related to certain aspects of the subjects' self-concept, perhaps a lack of self-acceptance.

4. The writer believes that the Cannot Say scale of the MMPI may contain information regarding personality characteristics of the test subject though as yet there has been little evidence brought forth to substantiate this possibility.

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## APPENDICES

# APPENDIX A

## STATISTICAL TABLES

TABLE 1

STRONG TOTAL NON-COMMITTAL SCORES OBTAINED  
FROM THREE GROUPS OF SUBJECTS, MALE AND  
FEMALE, SELECTED ON THE BASIS OF MMPI  
ITEM OMISSION BEHAVIOR

	HCS			MCS			LCS		
	N	M	SD	N	M	SD	N	M	SD
Males	64	143.06	36.31	69	126.83	33.55	56	128.16	33.27
Females	34	117.68	30.33	40	110.58	38.23	38	107.32	35.51

TABLE 2

ANALYSIS OF VARIANCE OF MALE TOTAL NON-COMMITTAL SCORES  
OBTAINED FROM THE STRONG FOR THREE GROUPS OF SUBJECTS  
SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Between Groups	10,406	2	5,203.00
Within Groups	224,010	186	1,204.35
Total	234,416	188	

$F = 4.32$  (Significant at .05 level)

TABLE 3

ANALYSIS OF VARIANCE OF FEMALE TOTAL NON-COMMITTAL SCORES  
OBTAINED FROM THE STRONG FOR THREE GROUPS OF SUBJECTS  
SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Between Groups	1,995	2	997.5
Within Groups	137,439	109	1,260.9
Total	139,434	111	

F = .79 (Not Significant)

TABLE 4

MEAN DIFFERENCES BETWEEN STRONG TOTAL NON-COMMITTAL SCORES  
FOR THREE GROUPS OF MALE SUBJECTS SELECTED ON THE BASIS  
OF MMPI ITEM OMISSION BEHAVIOR

Groups	M <sub>1</sub> - M <sub>2</sub>	t <sup>a</sup>
HCS vs LCS	14.90	2.31 *
HCS vs MCS	16.23	2.61 **
LCS vs MCS	1.33	.22

a t test for independent samples.

\* Significant at the .05 level for a two-tailed test.

\*\* Significant at the .01 level for a two-tailed test.

TABLE 5

STRONG "?" SCORES OBTAINED FROM THREE GROUPS OF SUBJECTS,  
MALE AND FEMALE, SELECTED ON THE BASIS OF MMPI  
ITEM OMISSION BEHAVIOR

	HCS GROUP			MCS GROUP			LCS GROUP		
	N	M	SD	N	M	SD	N	M	SD
Males	64	10.33	4.43	69	8.42	4.02	56	8.54	3.69
Females	34	7.47	2.48	40	7.18	2.85	38	5.11	3.00

TABLE 6

ANALYSIS OF VARIANCE OF MALE "?" SCORES OBTAINED FROM THE  
STRONG FOR THREE GROUPS OF SUBJECTS SELECTED ON THE  
BASIS OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Between Groups	146	2	73.00
Within Groups	3,139	186	16.88
Total	3,285	188	

F = 4.32 (Significant at the .05 level)

TABLE 7

MEAN DIFFERENCES BETWEEN STRONG "?" SCORES FOR THREE GROUPS OF MALE SUBJECTS SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Groups	M <sub>1</sub> - M <sub>2</sub>	t <sup>a</sup>
HCS vs LCS	1.79	2.32 *
HCS vs MCS	1.91	2.59 †
LCS vs MCS	.12	.17

<sup>a</sup> t test for independent samples.

\* Significant at the .05 level for a two-tailed test.

† Significant at the .02 level for a two-tailed test.

TABLE 8

ANALYSIS OF VARIANCE OF FEMALE "?" SCORES OBTAINED FROM THE STRONG FOR THREE GROUPS OF SUBJECTS SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Between Groups	123.74	2	61.87
Within Groups	913.82	109	8.38
Total	1,037.56	111	

F = 7.38 (Significant at the .01 level)

TABLE 9

MEAN DIFFERENCES BETWEEN STRONG "?" SCORES FOR THREE GROUPS OF FEMALE SUBJECTS SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Groups	M <sub>1</sub> - M <sub>2</sub>	t <sup>a</sup>
HCS vs LCS	2.36	3.52 ***
HCS vs MCS	.29	.38
LCS vs MCS	2.07	2.99 **

<sup>a</sup> t test for independent samples.

\*\*\* Significant at the .001 level for a two-tailed test.

\*\* Significant at the .01 level for a two-tailed test.

TABLE 10

ANALYSIS OF VARIANCE OF INTOLERANCE OF AMBIGUITY, IN TERMS OF MALE AND FEMALE CET SCORES, FOR THREE GROUPS OF SUBJECTS SELECTED ON THE BASIS OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Rows (Sex)	37.38	1	37.38
Columns (No. MMPI Items Omitted)	11.67	2	5.84
Interaction	4.82	2	2.41
Within Cells	1,422.73	84	16.94
Total	1,476.60	89	

Interaction Effect:  $F = .14$  (Not significant)

Column Effect: (No. MMPI Items Omitted)  $F = .45$  (Not significant)

Row (Sex) Effect:  $F = 2.21$  (Not significant)

TABLE 11

ANALYSIS OF VARIANCE OF DESIRE FOR CERTAINTY, IN  
TERMS OF MALE AND FEMALE DC SCORES, FOR THREE  
GROUPS OF SUBJECTS SELECTED ON THE BASIS  
OF MMPI ITEM OMISSION BEHAVIOR

Source of Variation	SS	df	Variance Estimate
Rows (Sex)	1,558,933.61	1	1,558,933.61
Columns (No. MMPI Items Omitted)	379,728.29	2	189,864.15
Interaction	1,597,995.54	2	798,997.77
Within Cells	33,442,413.86	84	398,123.97
Total	36,979,071.30		

Interaction Effect:  $F = 2.01$  (Not significant)

Column Effect: (No. MMPI Items Omitted)  $F = .48$  (Not significant)

Row (Sex) Effect:  $F = 3.92$  (Not significant)

TABLE 12

TEST OF THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN  
THE MEAN NUMBER OF MMPI OMISSIONS FOR TWO GROUPS  
OF MMPI ITEMS CATEGORIZED ON THE BASIS OF  
SOCIAL DESIRABILITY RATINGS

	N	M	SD	t <sup>a</sup>
Favorable Items	221	9.10	9.24	2.06 *
Unfavorable Items	345	7.59	7.99	

<sup>a</sup> t for two independent samples.

\* Significant at the .05 level for a two-tailed test.

## APPENDIX B

### TEST INSTRUMENTS

#### Desire for Certainty Test

Instructions: Indicate on the answer sheet provided you the probability (some number from 0 to 100) you feel is appropriate to the following statements. Indicate also, by circling one of the numbers (1, 2, 3, 4, and 5) the degree of certainty you feel with regard to your probability estimate. Do not spend too much time on any one statement and finish as quickly as you can. Remember, each probability estimate refers to so many chances out of 100.

1. The chances that an adult American male will earn at least \$4,000 a year are about... in 100.
2. A student entering law school will quit before getting his law degree ....
3. Frequent thumbsucking during childhood will make the teeth stick out (causing buck teeth) ....
4. The President of the United States will be a man without a college education ....
5. A major league baseball team will win the pennant if it is in first place July 4th ....
6. A sexual pervert will have a low intelligence (IQ 80 or less) ....
7. A high school graduate will go on to a freshman year in college ....
8. A couple getting married this year will later have a divorce ....
9. An American male now at the age of 40 will live beyond the age of 55 ....



10. An American family will live in a place without a telephone ....
11. An American family will own its own home ....
12. The telephone number you call will be busy ....
13. An American citizen will believe in God ....
14. A varsity football player in an American university will be subsidized (given money for his football ability) ....
15. An American city of over 50,000 people will have a chapter of the League of Women Voters ....
16. The governor of a state will be elected for a second term in office ....
17. A son will go into the same kind of work as his father ....
18. A man 70 years old will need financial help from someone to support himself ....
19. Spanking a child will make him tell the truth the next time ....
20. An American-born baby will get a poor and inadequate diet during his first year of life ....
21. An adult male will stay home instead of going to church on Sunday ....
22. A sixth grade teacher in the public schools will be a man ....
23. A child whose parents are divorced will be neurotic ....
24. In the United States a girl will be married by the age of 17 ....
25. A world champion boxer comes from a poor family ....
26. An American citizen will be bilingual (speak two languages) ....
27. A five card deal will have two cards of the same kind (one pair) ....
28. A man with a broken neck will die ....

29. A crime in the United States will be solved (someone arrested and convicted for it) ....
30. The number of auto accidents in a year will be higher than for the year just before ....
31. A small business (for example, gas station, motel) will fail within two years after starting ....
32. The person one marries will have the same religion ....

# CONCEPT EVALUATION TECHNIQUE

Card No., Concept No., and Card Orientation				Location (Beck)	Subject's Response	
Concept					Yes	No
I.	1	Λ	bat	W		
	2	Λ	fish	D1		
	3	Λ	witch	D2		
	4	Λ	person	D3		
	5	V	man	W		
II.	6	Λ	woman	Dd24		
	7	Λ	two people	W		
	8	Λ	dancer	Ds5		
	9	>	dog	D1		
	10	Λ	butterfly	D3		
III.	11	Λ	tree	D5		
	12	Λ	face	D8		
	13	Λ	butterfly	D3		
	14	Λ	two people	D1		
	15	Λ	turkey	D2		
IV.	16	Λ	person	D1		
	17	Λ	man	W		
	18	Λ	candle	D3		
	19	Λ	shoe	D6		
	20	Λ	animal skin	W		

			Yes	No
V.	21	Λ	bat	W
	22	Λ	cat	D4
	23	Λ	person's leg	D1
	24	V	man	W
VI.	25	Λ	man	D3
	26	>	dog's face	W
	27	>	man's face	Ds*
	28	Λ	animal skin	W
VII.	29	Λ	child	Dd22
	30	Λ	river	D6
	31	Λ	two women	D2
	32	V	shrubs	W
	33	Λ	frog	W
VIII.	34	Λ	ribs	D3
	35	Λ	two people	D1
	36	Λ	rainbow	W
	37	Λ	animal	D1
IX.	38	Λ	two witches	D3
	39	Λ	alligators	D5
	40	Λ	frog	D1
	41	V	vase	DsE
	42	Λ	boat	D6
	43	>	man's head	D4

\*White space immediately above left D4.

Yes No

x.	44	Λ	rabbit's head	D5
	45	Λ	intestines	D11
	46	Λ	crab or octopus	D1
	47	Λ	flashlight	Dd24
	48	Λ	two women	D4
	49	Λ	skeleton	Dds30
	50	Λ	pitcher	D2

Total Number of Rejections

# APPENDIX C

NUMBER AND PERCENTAGE OF UNIVERSITY OF FLORIDA FRESHMEN WHO  
WERE HIGH CANNOT SAY SCORERS GIVING CANNOT  
SAY RESPONSES TO EACH ITEM

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
1	3	1	4	4	4	4
2	0	0	0	0	0	0
3	1	1	2	1	3	2
4	3	0	3	4	0	3
5	1	0	1	1	0	1
6	3	2	5	4	5	6
7	4	0	4	6	0	4
8	2	0	2	3	0	2
9	3	1	4	4	3	4
10	1	0	1	1	0	1
11	7	5	12	10	14	12
12	4	1	5	6	3	5
13	5	2	7	7	6	7
14	6	0	6	9	0	6
15	8	2	10	12	6	10
16	1	1	2	1	3	2
17	8	2	10	12	6	10
18	3	0	3	4	0	3
19	13	7	20	19	20	19
20	7	8	15	10	23	15
21	2	2	4	3	6	4
22	1	1	2	1	3	2
23	1	1	2	1	3	2
24	4	2	6	6	6	6
25	2	0	2	3	0	2
26	8	5	13	12	14	13
27	5	1	6	7	3	6
28	7	1	8	10	3	8
29	1	0	1	1	0	1
30	1	1	2	1	3	2
31	0	0	0	0	0	0
32	1	1	2	1	3	2

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
33	4	3	7	6	9	7
34	1	0	1	1	0	1
35	4	0	4	6	0	4
36	0	1	1	0	3	1
37	0	2	2	0	6	2
38	2	1	3	3	3	3
39	3	1	4	4	3	4
40	2	1	3	3	3	3
41	2	1	3	3	3	3
42	3	0	3	4	0	3
43	1	2	3	1	6	3
44	0	0	0	0	0	0
45	5	3	8	7	9	8
46	6	8	14	9	23	14
47	4	0	4	6	0	4
48	5	2	7	7	6	7
49	0	0	0	0	0	0
50	11	5	16	16	14	16
51	2	0	2	3	0	2
52	3	1	4	4	3	4
53	8	5	13	12	14	13
54	21	8	29	31	23	28
55	2	2	4	3	6	4
56	1	0	1	1	0	1
57	17	7	24	25	20	23
58	48	25	73	71	71	71
59	7	4	11	10	11	11
60	1	0	1	1	0	1
61	11	0	11	16	0	11
62	3	1	4	4	3	4
63	2	0	2	3	0	2
64	17	1	18	25	3	17
65	10	2	12	15	6	12
66	3	4	7	4	11	7
67	13	5	18	19	14	17
68	6	0	6	9	0	6
69	2	2	4	3	6	4
70	32	9	41	48	26	40
71	5	3	8	7	9	8
72	2	1	3	3	3	3
73	20	4	24	30	11	23
74	2	0	2	3	0	2
75	0	0	0	0	0	0
76	4	1	5	6	3	5

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
77	6	0	6	9	0	6
78	10	2	12	15	6	12
79	7	3	10	10	9	10
80	1	1	2	1	3	2
81	6	6	12	9	17	12
82	5	2	7	7	6	7
83	0	1	1	0	3	1
84	7	2	9	10	6	9
85	1	0	1	1	0	1
86	10	4	14	15	11	14
87	1	2	3	1	6	3
88	3	3	6	4	9	6
89	15	6	21	22	17	21
90	0	0	0	0	0	0
91	5	0	5	7	0	5
92	2	2	4	3	6	4
93	12	7	19	18	20	18
94	7	3	10	10	9	10
95	3	0	3	4	0	3
96	2	3	5	3	9	5
97	4	2	6	6	6	6
98	24	10	34	36	29	33
99	7	3	10	10	9	10
100	6	5	11	9	14	11
101	19	8	27	28	23	26
102	12	4	16	18	11	16
103	5	0	5	7	0	5
104	0	1	1	0	3	1
105	4	0	4	6	0	4
106	1	1	2	1	3	2
107	2	3	5	3	9	5
108	8	1	9	12	23	9
109	2	1	3	3	3	3
110	5	0	5	7	0	5
111	3	1	4	4	3	4
112	7	5	12	10	14	12
113	1	0	1	1	0	1
114	0	0	0	0	0	0
115	18	6	24	27	17	23
116	3	5	8	4	14	8
117	14	2	16	21	6	16
118	0	0	0	0	0	0
119	5	1	6	7	3	6
120	0	0	0	0	0	0



Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
121	0	0	0	0	0	0
122	2	0	2	3	0	2
123	0	0	0	0	0	0
124	13	7	20	19	20	19
125	0	0	0	0	0	0
126	10	1	11	15	3	11
127	20	7	27	30	20	26
128	5	0	5	7	0	5
129	11	1	12	16	3	12
130	0	1	1	0	3	1
131	4	3	7	6	9	7
132	6	1	7	9	3	7
133	1	4	5	1	11	5
134	6	3	9	9	9	9
135	7	2	9	10	6	9
136	6	1	7	9	3	7
137	1	3	4	1	9	4
138	3	1	4	4	3	4
139	3	1	4	4	3	4
140	5	1	6	7	3	6
141	7	1	8	10	3	8
142	2	0	2	3	0	2
143	6	1	7	9	3	7
144	8	4	12	12	11	12
145	2	0	2	3	0	2
146	6	2	8	9	6	8
147	4	3	7	6	9	7
148	2	0	2	3	0	2
149	0	0	0	0	0	0
150	3	3	6	4	9	6
151	0	0	0	0	0	0
152	3	1	4	4	3	4
153	0	0	0	0	0	0
154	0	1	1	0	3	1
155	2	1	3	3	3	3
156	0	0	0	0	0	0
157	2	1	3	3	3	3
158	2	0	2	3	0	2
159	1	1	2	1	3	2
160	11	7	18	16	20	17
161	2	1	3	3	3	3
162	13	4	17	19	11	17
163	9	0	0	13	0	9
164	7	6	13	10	17	13
165	10	3	13	15	9	13

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
166	4	0	4	6	0	4
167	7	1	8	10	3	8
168	5	1	6	7	3	6
169	0	0	0	0	0	0
170	5	0	5	7	0	5
171	5	2	7	7	6	7
172	9	2	11	13	16	11
173	7	1	8	10	3	8
174	1	0	1	1	0	1
175	0	0	0	0	0	0
176	1	0	1	1	0	1
177	9	3	12	13	9	12
178	0	0	0	0	0	0
179	4	2	6	6	6	6
180	3	0	3	4	0	3
181	7	1	8	10	3	8
182	3	1	4	4	3	4
183	13	2	15	19	6	15
184	0	1	1	0	3	1
185	1	0	1	1	0	1
186	1	0	1	1	0	1
187	1	0	1	1	0	1
188	4	1	5	6	3	5
189	1	0	1	1	0	1
190	0	1	1	0	3	1
191	3	0	3	4	0	3
192	1	0	1	1	0	1
193	0	0	0	0	0	0
194	5	0	5	7	0	5
195	2	1	3	3	3	3
196	3	0	3	4	0	3
197	2	0	2	3	0	2
198	4	1	5	6	3	5
199	10	5	15	15	14	15
200	3	0	3	4	0	3
201	11	6	17	16	17	17
202	3	0	3	4	0	3
203	6	2	8	9	6	8
204	3	1	4	4	3	4
205	3	1	4	4	3	4
206	6	0	6	9	0	6
207	1	0	1	1	0	1
208	8	4	12	12	11	12
209	9	5	14	13	14	14
210	0	0	0	0	0	0

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
211	0	1	1	0	3	1
212	2	0	2	3	0	2
213	2	1	3	3	3	3
214	2	0	2	3	0	2
215	0	0	0	0	0	0
216	7	1	8	10	3	8
217	1	2	3	1	6	3
218	1	1	1	0	0	1
219	0	4	4	0	11	4
220	8	4	12	12	11	12
221	3	0	3	4	0	3
222	12	6	18	18	17	17
223	10	8	18	15	23	17
224	1	1	2	1	3	2
225	4	0	4	6	0	4
226	5	0	5	7	0	5
227	0	0	0	0	0	0
228	9	2	11	13	6	11
229	6	3	9	9	9	9
230	2	1	3	3	3	3
231	26	5	31	39	14	30
232	17	7	24	25	20	23
233	14	8	22	21	23	21
234	4	1	5	6	3	5
235	7	1	8	10	3	8
236	10	2	12	15	6	12
237	34	16	50	51	46	49
238	4	1	5	6	3	5
239	10	5	15	15	14	15
240	2	1	3	3	3	3
241	8	1	9	12	3	9
242	2	4	6	3	11	6
243	2	1	3	3	3	3
244	13	3	16	19	9	16
245	2	2	4	3	6	4
246	3	0	3	4	0	3
247	1	0	1	1	0	1
248	6	6	12	9	17	12
249	17	8	25	25	23	24
250	10	6	16	15	17	15
251	2	0	2	3	0	2
252	7	1	8	10	3	8
253	10	1	11	15	3	11
254	12	4	16	18	11	16
255	15	10	25	22	29	24

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
256	1	0	1	1	0	1
257	6	5	11	9	14	11
258	10	2	12	15	6	12
259	5	1	6	7	3	6
260	4	1	5	6	3	5
261	6	1	7	9	3	7
262	5	2	7	7	6	7
263	2	0	2	3	0	2
264	6	3	9	9	9	9
265	3	2	5	4	6	5
266	10	3	13	15	9	13
267	5	2	7	7	6	7
268	16	3	19	24	9	18
269	4	0	4	6	0	4
270	5	2	7	7	6	7
271	9	3	12	13	9	12
272	3	1	4	4	3	4
273	3	0	3	4	0	3
274	2	1	3	3	3	3
275	3	0	3	4	0	3
276	4	2	6	6	6	6
277	4	2	6	6	6	6
278	4	2	6	6	6	6
279	1	0	1	1	0	1
280	10	4	14	15	11	14
281	7	0	7	10	0	7
282	2	3	5	3	7	5
283	6	1	7	9	3	7
284	11	5	16	16	14	16
285	2	2	4	3	6	4
286	7	1	8	10	3	8
287	33	13	46	49	36	45
288	1	1	2	1	3	2
289	10	8	18	15	23	17
290	5	2	7	7	6	7
291	0	0	0	0	0	0
292	1	0	1	1	0	1
293	1	0	1	1	0	1
294	0	0	0	0	0	0
295	15	5	20	22	14	19
296	10	0	10	15	0	10
297	19	12	31	28	34	30
298	14	7	21	21	20	20
299	26	12	38	39	34	37
300	10	0	10	15	0	10

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
301	0	1	1	0	3	1
302	0	1	1	0	3	1
303	3	1	4	4	3	4
304	3	0	3	4	0	3
305	1	1	2	1	3	2
306	9	3	12	13	9	12
307	0	2	2	0	6	2
308	5	1	6	7	3	6
309	3	2	5	4	6	5
310	6	8	14	9	23	14
311	3	0	3	4	0	3
312	2	0	2	3	0	2
313	6	2	8	9	6	8
314	7	3	10	10	9	10
315	1	0	1	1	0	1
316	11	3	14	16	9	14
317	10	4	14	15	11	14
318	5	2	7	7	6	7
319	17	1	18	25	3	17
320	8	0	8	12	0	8
321	5	1	6	7	3	6
322	4	1	5	6	3	5
323	5	2	7	7	6	7
324	2	3	5	3	9	5
325	2	0	2	3	0	2
326	1	0	1	1	0	0
327	6	2	8	9	6	8
328	4	0	4	6	0	0
329	3	1	4	4	3	4
330	0	1	1	0	3	1
331	7	3	10	10	9	10
332	2	1	3	3	3	3
333	3	1	4	4	3	4
334	4	1	5	6	3	5
335	2	2	4	3	6	4
336	2	1	3	3	3	3
337	6	3	9	9	9	9
338	7	1	8	10	3	8
339	2	0	2	3	0	2
340	2	0	2	3	0	2
341	0	2	2	0	6	2
342	4	0	4	6	0	4
343	4	3	7	6	9	7
344	2	1	3	3	3	3
345	0	0	0	0	0	0

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
346	2	1	3	3	3	3
347	10	2	12	15	6	12
348	8	4	12	12	11	12
349	6	0	6	9	0	6
350	2	0	2	3	0	2
351	2	1	3	3	3	3
352	3	4	4	4	3	4
353	3	2	5	4	6	5
354	0	2	2	0	6	2
355	1	1	2	1	3	2
356	5	0	5	7	0	5
357	5	0	3	7	9	3
358	9	1	10	13	3	10
359	3	5	8	4	14	4
360	1	0	1	1	0	1
361	7	0	7	10	0	7
362	10	2	12	15	6	12
363	1	1	2	1	3	2
364	9	1	10	13	3	10
365	0	1	1	0	3	1
366	4	3	7	6	9	7
367	2	3	5	3	9	5
368	9	2	11	13	6	11
369	9	2	11	13	6	11
370	3	1	4	4	3	4
371	6	2	3	9	6	3
372	11	6	17	16	17	17
373	18	6	24	27	17	23
374	3	2	5	4	6	5
375	7	1	3	10	3	3
376	12	3	15	18	9	15
377	7	3	10	10	9	10
378	6	2	3	9	6	3
379	7	1	8	10	3	8
380	6	3	9	9	9	9
381	5	1	6	7	3	6
382	17	10	27	25	29	26
383	5	1	6	7	3	6
384	3	3	6	4	9	6
385	1	1	2	1	3	2
386	6	2	3	9	6	3
387	20	11	31	30	31	30
388	0	1	1	0	3	1
389	4	6	10	6	17	10
390	14	10	24	21	29	23

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
391	10	4	14	15	11	14
392	1	0	1	1	0	1
393	5	0	5	7	0	5
394	7	1	8	10	3	8
395	4	3	7	6	9	7
396	4	2	6	6	6	6
397	3	1	4	4	3	1
398	4	0	4	6	0	4
399	1	0	1	1	0	1
400	30	13	43	45	36	42
401	0	1	1	0	3	1
402	2	1	3	3	3	3
403	8	3	11	12	9	11
404	17	7	24	25	20	23
405	0	0	0	0	0	0
406	7	3	10	10	9	10
407	3	1	4	4	3	4
408	6	3	9	9	9	9
409	4	1	5	6	3	5
410	16	5	20	24	14	19
411	2	2	4	3	6	4
412	1	1	2	1	3	2
413	22	9	31	33	26	30
414	5	4	9	7	11	9
415	26	18	44	39	50	43
416	4	3	7	6	9	7
417	5	2	7	7	6	7
418	1	3	4	1	9	4
419	0	0	0	0	0	0
420	5	2	7	7	6	7
421	1	1	2	1	3	2
422	2	1	3	3	3	3
423	2	2	4	3	6	4
424	1	1	2	1	3	2
425	3	1	4	4	3	4
426	8	1	9	12	3	9
427	4	6	10	6	17	10
428	11	3	14	16	9	14
429	14	4	18	21	11	17
430	6	2	8	9	6	8
431	4	5	9	6	14	9
432	3	1	4	4	3	4
433	2	1	3	3	3	3
434	6	3	9	9	9	9
435	21	7	28	31	20	27

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
436	13	11	24	19	31	23
437	18	7	25	27	20	24
438	7	7	14	10	20	14
439	3	1	4	4	3	4
440	7	4	11	10	11	11
441	14	13	27	21	37	26
442	1	1	2	1	3	2
443	10	7	17	15	20	17
444	11	7	18	17	20	17
445	10	5	15	15	14	15
446	2	4	6	3	11	6
447	8	6	14	12	17	14
448	2	0	2	3	0	2
449	5	1	6	7	3	6
450	11	1	12	17	3	12
451	9	4	13	13	11	13
452	3	2	5	4	6	5
453	6	1	7	9	3	7
454	9	0	9	13	0	9
455	15	5	20	22	14	19
456	14	8	22	21	23	21
457	4	0	4	6	0	4
458	3	1	4	4	3	4
459	0	1	1	0	3	1
460	2	0	2	3	0	2
461	5	4	9	7	11	9
462	1	0	1	2	0	1
463	13	1	14	19	3	14
464	9	4	13	13	11	13
465	10	0	10	15	0	10
466	0	0	0	0	0	0
467	0	1	1	0	3	1
468	12	3	15	18	9	15
469	8	5	13	12	14	13
470	2	4	6	3	11	6
471	10	4	14	15	11	14
472	4	3	7	6	9	7
473	6	1	7	9	3	7
474	6	0	6	9	0	6
475	21	12	33	31	34	32
476	9	4	13	13	11	13
477	21	16	36	30	46	35
478	8	4	12	12	11	12
479	3	0	3	4	0	3
480	2	0	2	3	0	2



Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
481	2	1	3	3	3	3
482	2	0	2	3	0	2
483	26	7	33	39	20	32
484	12	9	21	18	26	20
485	17	12	29	25	34	28
486	1	1	2	1	3	2
487	3	3	6	4	9	6
488	1	0	1	1	0	1
489	7	5	12	10	14	12
490	2	0	2	3	0	2
491	14	5	19	21	14	18
492	5	2	7	7	6	7
493	17	9	26	25	26	25
494	1	1	2	1	3	2
495	13	11	29	27	31	28
496	6	9	15	11	14	11
497	4	3	7	6	9	7
498	3	2	5	4	6	5
499	1	3	4	1	9	4
500	5	5	10	7	14	10
501	6	4	10	9	11	10
502	6	4	10	9	11	10
503	8	6	14	12	17	14
504	17	7	24	25	20	23
505	3	1	4	4	3	4
506	11	3	14	18	9	15
507	8	8	16	12	23	16
508	1	0	1	1	0	1
509	8	4	12	12	11	12
510	3	3	6	4	9	6
511	4	2	6	6	6	6
512	1	0	1	1	0	1
513	30	13	43	45	37	42
514	6	5	11	9	14	11
515	0	1	1	0	3	1
516	4	1	5	6	3	5
517	1	0	1	1	0	1
518	6	4	10	9	11	10
519	2	1	3	3	3	3
520	8	4	12	12	11	12
521	6	2	8	9	6	8
522	0	0	0	0	0	0
523	9	0	9	14	0	9
524	5	1	6	7	3	6
525	1	2	3	1	6	3
526	1	1	2	1	3	2

Appendix C--continued

Book- let No.	No. Males Omitting (N = 68)	No. Females Omitting (N = 35)	Total No. Omitting (N = 103)	% Males Omitting	% Females Omitting	% Total Omitting
527	3	1	3	3	3	3
528	7	2	9	11	6	9
529	5	2	7	7	6	7
530	1	0	1	1	0	1
531	9	3	12	14	9	12
532	10	5	15	15	14	15
533	3	0	3	4	0	3
534	16	8	24	24	23	25
535	1	0	1	1	0	1
536	3	2	5	4	6	5
537	2	0	2	3	0	2
538	4	0	4	6	0	4
539	1	2	3	1	6	3
540	0	0	0	0	0	0
541	2	1	3	3	3	3
542	5	3	8	7	9	8
543	0	0	0	0	0	0
544	1	1	2	1	3	2
545	2	0	2	3	0	2
546	1	3	4	2	9	4
547	5	4	9	7	11	9
548	6	9	15	9	6	15
549	4	5	9	6	14	9
550	11	3	14	16	9	13
551	6	2	8	9	6	8
552	2	2	4	3	6	4
553	1	2	3	1	6	3
554	12	3	15	18	9	15
555	0	2	2	0	6	2
556	3	1	4	4	3	4
557	2	0	2	3	0	2
558	22	10	32	35	29	31
559	1	1	2	1	3	2
560	2	0	2	3	0	2
561	10	1	11	15	3	11
562	23	9	32	34	36	31
563	12	4	16	18	11	16
564	5	4	9	7	11	9
565	2	1	3	3	3	3
566	12	4	16	18	11	16

## BIOGRAPHICAL SKETCH

Morris Lee Eaddy was born October 20, 1935, at Bushnell, Florida. Following graduation from Bushnell High School in June, 1953, he enrolled in the summer session at the University of Florida. He received the Bachelor of Science degree from the University of Florida in June, 1957. He enrolled in the Graduate School of the University of Florida in September, 1957, and received the degree of Masters of Rehabilitation Counseling in January, 1959. In February, 1959, he began work toward the degree of Doctor of Philosophy in the field of clinical psychology and received this degree in February, 1962.


While in the Graduate School he worked as a graduate assistant at the University of Florida Reading Laboratory and Clinic and as a graduate assistant in the Department of Psychology. For one semester he was employed part time as a clinician in the University Counseling Center. He served a one year internship in clinical psychology at the Columbus Psychiatric Institute and Hospital in Columbus, Ohio from February, 1961, to February, 1962.

Morris Lee Eaddy is married to the former Norma Lee Blanks of Miami, Florida. He is a member of Phi Gamma Delta fraternity and is a student journal member of the American Psychological Association.



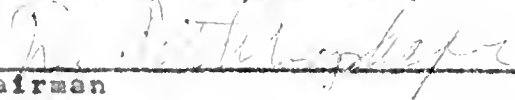
This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

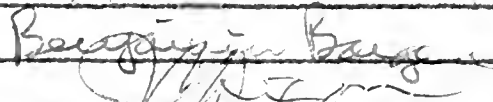

February 3, 1962

  
\_\_\_\_\_  
Dean, College of Arts and Sciences

\_\_\_\_\_  
Dean, Graduate School

Supervisory Committee:

  
\_\_\_\_\_  
Chairman

  
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